PFM-42V1 series Protocol Manual

(Full access version)

Preliminary Ver. 1.1

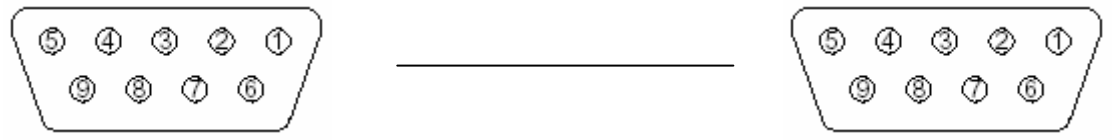
1. Communication Parameters

Baud Rate	9600
Character length	8 bits
Parity	none
Stop bit length	1 bits
Flow Control	none

2. Pin Assignment

Monitor side : D-sub 9pin (Female)

Host side : D-sub 9pin (male)



Pin number	Function
1	NC
2	RD
3	TD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Pin number	Function
1	NC
2	RD
3	TD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

(Straight connection is necessary)

3. Command Table

1. General Function.

(a) Mode Control

Syntax	Header	Category	Function	Data1	Data2
Control	0x8C	0x00	Code Table (1-a)-[a]	0x01	Code Table (1-a)-[b]
Enquiry	0x83			0xFF	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	…	
Control	0x70	0x00					Completed
	0x70	0x01					Limit Over
	0x70	0x02					Limit Under
	0x70	0x03					Command Canceled
Enquiry	0x70	0x00	0x01	Code Table (1-a)-[b]			Completed
Execute Judge	0x70	0x00	Variable	Code Table (1-a)-[b]	…	…	Completed with Enable Codes
	0x70	0x03					Command Disable
	0x70	0x04					Command All Enable

Code table (1-a)

[a] Function		[b] Range/Switch Code		Command		Execute Judge ACK		
				Control	Enquiry	Standby	Setup Sequence	Power On
0x00	Power	0x00	OFF	Yes	Yes	Enable	Enable	Enable
		0x01	ON					
0x01	Input Select	0x08	MON RGB1	Yes	Yes	Disable	Note	Note
		0x09	MON YUV1					
		0x0A	MON RGB2					
		0x0B	MON YUV2					
		0x0C	MON VIDEO (COMPOSITE)					
		0x0D	MON VIDEO (Y/C)					
		0x20	MON DVI					
0x02	Force Status Display	0x00	OFF	Yes	Yes	Disable	Disable	Enable
		0x01	ON					
0x03	Audio Mute	0x00	OFF	Yes	Yes	Disable	Disable	Enable
		0x01	ON					
0x04	Auto Status Display	0x00	ON	Yes	Yes	Disable	Disable	Enable
		0x01	OFF					
0x05	Closed Caption	0x00	OFF	Yes	Yes	Disable	Disable	Note
		0x01	Caption1					
		0x02	Caption2					
		0x03	Text1					
		0x04	Text2					
0x06	Color System	0x00	Auto	Yes	Yes	Disable	Disable	Note
		0x01	NTSC					
		0x02	NTSC 4.43					
		0x03	PAL					
		0x04	SECAM					
		0x05	PAL-M					
		0x06	PAL-N					
		0x07	PAL60					
0x07	Auto Color System	0x00	NTSC/PAL/SECAM/NTSC443	Yes	Yes	Disable	Disable	Note
		0x01	NTSC/PAL-M/PAL-N					
0x08	Power Saving	0x00	OFF	Yes	Yes	Note	Note	Note
		0x01	ON					
0x09	ON/OFF Timer	0x00	OFF Timer	Yes	Yes	Note	Note	Note
		0x01	ON Timer					
		0x02	ON/OFF Timer					
		0x03	OFF					

Code table (1-a)

[a] Function		[b] Range/Switch Code		Command		Execute Judge ACK		
				Control	Enquiry	Standby	Setup Sequence	Power On
0x0A	Timer Repeat	0x00	OFF	Yes	Yes	Enable	Enable	Enable
		0x01	ON					
0x0B	Picture Inversion	0x00	OFF	Yes	Yes	Note	Note	Note
		0x01	AUTO					
		0x02	ON					
0x0C	Picture Orbit	0x00	OFF	Yes	Yes	Enable	Enable	Enable
		0x01	ON					
0x0D	Orbit Range	0x00	Small	Yes	Yes	Enable	Enable	Enable
		0x01	Middle					
		0x02	Large					
0x0E	Orbit Cycle	0x00	10 sec.	Yes	Yes	Enable	Enable	Enable
		0x01	30 sec.					
		0x02	1 min.					
		0x03	5 min.					
0x0F	Language	0x00	Japanese	Yes	Yes	Enable	Enable	Enable
		0x01	English					
		0x02	Deutsch					
		0x03	Francais					
		0x04	Espanol					
		0x05	Italiano					
0x10	Index Number	0x01 – 0xFF		Yes	Yes	Enable	Enable	Enable
0x11	Remote Mode	0x00	ON	Yes	Yes	Enable	Enable	Enable
		0x01	ON					
		0x02	OFF					
0x12	Remote Only	0x00	OFF	Yes	Yes	Enable	Enable	Enable
		0x01	ON					
0x13	Energy Saving	0x00	Standard	Yes	Yes	Enable	Enable	Enable
		0x01	Reduce					
0x14	Speaker Out	0x00	ON	Yes	Yes	Disable	Disable	Enable
		0x01	OFF					
0x16	HD Mode	0x00	1080i	Yes	Yes	Disable	Disable	Enable
		0x01	1035i					
0x17	RGB Mode	0x00	DTV	Yes	Yes	Disable	Disable	Enable
		0x01	PC					
0x18	Sync Mode	0x00	H/Comp	Yes	Yes	Disable	Disable	Enable
		0x01	Video					

Code table (1-a)

[a] Function		[b] Range/Switch Code		Command		Execute Judge ACK		
				Control	Enquiry	Standby	Setup Sequence	Power On
0x19	Menu Key	0x00	On/Off	Yes	Yes	Disable	Disable	Enable
		0x01	Return					
0x1A	Sleep	0x00	OFF	Yes	Yes	Note	Note	Note
		0x01	30 min					
		0x02	60 min					
		0x03	90 min					
		0x04	120 min					
0x1B	Clock Display	0x00	OFF	Yes	Yes	Enable	Enable	Enable
		0x01	ON					
0x30	PAP	0x00	ON	Yes	Yes	Disable	Disable	Enable
		0x01	OFF					
0x31	Active Picture	0x00	Left	Yes	Yes	Disable	Disable	Enable
		0x01	Right					
		0x02	Swap					
0x32	Picture Size	0x00 – 0x0E		Yes	Yes	Disable	Disable	Enable

(b) Color matrix

Syntax	Header	Category	Function	Data1	Data2	Data3
Control	0x8C	0x00	Code Table (1-b)-[a]	0x02	Code Table (1-c)	Code Table (1-b)-[b]
Enquiry	0x83			Code Table (1-c)	0xFF	
Execute Judge	0x89			0xFF	0xFF	

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	...	
Control	0x70	0x00					Completed
	0x70	0x03					Command Canceled
Enquiry	0x70	0x00	0x02	Code Table (1-c)	Code Table (1-b)-[b]		Completed
Execute Judge	0x70	0x03					Command Disable
	0x70	0x04					Command All Enable

Code Table (1-b)

[a] Function		[b] Range/Switch Code		Command		Execute Judge ACK		
				Control	Enquiry	Standby	Setup Sequence	Power On
0x1D	Color Matrix	0x00	YCbCr	Yes	Yes	Disable	Enable	Enable
		0x01	YPbPr					

Code Table (1-c)

Format Select	
0x00	480p
0x01	1080i
0x02	720p

(c) Time control

Syntax	Header	Category	Function	Data1	Data2	Data3
Control	0x8C	0x00	Code Table (1-d)-[a]	0x02	Hour: 0x00 – 0x17	Minute: 0x00 – 0x3B
Enquiry	0x83			Code Table (1-c)	0xFF	
Execute Judge	0x89			0xFF	0xFF	

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	...	
Control	0x70	0x00					Completed
	0x70	0x01					Limit Over
	0x70	0x02					Limit Under
	0x70	0x03					Command Canceled
Enquiry	0x70	0x00	0x02	Hour: 0x00 – 0x17	Minute: 0x00 – 0x3B		Completed
Execute Judge	0x70	0x04					Command All Enable

Code Table (1-d)

[a] Function		[b] Range/Switch Code	Command		Execute Judge ACK		
			Control	Enquiry	Standby	Setup Sequence	Power On
ON/OFF Timer							
0x1E	Power ON Time		Yes	Yes	Enable	Enable	Enable
0x1F	Power OFF Time		Yes	Yes	Enable	Enable	Enable
Picture Inversion							
0x20	Invert Start Time		Yes	Yes	Enable	Enable	Enable
0x21	Invert End Time		Yes	Yes	Enable	Enable	Enable
Time Set							
0x22	Time Set		Yes	Yes	Enable	Enable	Enable

2. Picture/Sound

(a) Picture/sound

Syntax	Header	Category	Function	Data1	Data2
Control	0x8C	0x10	Code Table (2-a)-[a]	0x01	Code Table (2-a)-[b]
Enquiry	0x83			0xFF	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	...	
Control	0x70	0x00					Completed
	0x70	0x01					Limit Over
	0x70	0x02					Limit Under
	0x70	0x03					Command Canceled
Enquiry	0x70	0x00	0x01	Code Table (2-a)-[b]			Completed
Execute Judge	0x70	0x00	Variable (Data Size)	Code Table (2-a)-[b]	...	...	Completed with Enable Codes
	0x70	0x03					Command Disable
	0x70	0x04					Command All Enable

Code table (2-a)

[a] Function		[b] Range/Switch Code		Command		Execute Judge ACK		
				Control	Enquiry	Standby	Setup Sequence	Power On
0x00	Contrast	0x00 – 0x64		Yes	Yes	Disable	Disable	Enable
0x01	Brightness	0x00 – 0x64		Yes	Yes	Disable	Disable	Enable
0x02	Chroma	0x00 – 0xC8		Yes	Yes	Disable	Disable	Enable
0x03	Phase	0x00 – 0x64		Yes	Yes	Disable	Disable	Enable
0x04	Color Temp	0x00	Cool	Yes	Yes	Disable	Disable	Enable
		0x01	Neutral					
		0x02	Warm					
		0x03	User1					
		0x04	User2					
		0x05	User3					
0x09	Sharpness	0x00 – 0x14		Yes	Yes	Disable	Disable	Enable
0x0A	NR	0x00	Off	Yes	Yes	Disable	Disable	Enable
		0x01	Low					
		0x02	Mid					
		0x03	High					

Code table (2-a)

[a] Function		[b] Range/Switch Code		Command		Execute Judge ACK		
				Control	Enquiry	Standby	Setup Sequence	Power On
0x0C	Dynamic Picture	0x00	On	Yes	Yes	Disable	Disable	Enable
		0x01	Off					
0x0E	Gamma Correct	0x00	High	Yes	Yes	Disable	Disable	Enable
		0x01	Mid					
		0x02	Low					
0x10	Picture Mode	0x00	Standard	Yes	Yes	Disable	Disable	Enable
		0x01	Vivid					
		0x02	User1					
		0x03	User2					
		0x04	User3					
0x30	Volume	0x00 – 0x64		Yes	Yes	Disable	Disable	Enable
0x31	Treble	0x00 – 0x64		Yes	Yes	Disable	Disable	Enable
0x32	Bass	0x00 – 0x64		Yes	Yes	Disable	Disable	Enable
0x33	Balance	0x00 – 0x64		Yes	Yes	Disable	Disable	Enable
0x34	Surround	0x00	Off	Yes	Yes	Disable	Disable	Enable
		0x01	Hall					
		0x02	Simulate					

(b) Color temperature

Syntax	Header	Category	Function	Data1	Data2	Data3
Control	0x8C	0x10	Code Table (2-b)-[a]	0x02	Code Table (2-c)	Code Table (2-b)-[b]
Enquiry	0x83			Code Table (2-c)	0xFF	
Execute Judge	0x89			0xFF	0xFF	

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	
Control	0x70	0x00				Completed
	0x70	0x03				Command Canceled
Enquiry	0x70	0x00	0x02	Code Table (2-c)	Code Table (2-b)-[b]	Completed
Execute Judge	0x70	0x03				Command Disable
	0x70	0x04				Command All Enable

Code table (2-b)

[a] Function		[b] Range/Switch Code	Command		Execute Judge ACK		
			Control	Enquiry	Standby	Setup Sequence	Power On
0x05	Red Gain	0x00 – 0x1E	Yes	Yes	Disable	Disable	Disable
0x06	Green Gain	0x00 – 0x1E	Yes	Yes	Disable	Disable	Disable
0x07	Blue Gain	0x00 – 0x1E	Yes	Yes	Disable	Disable	Disable

Code Table (2-c)

Format Select	
0x03	User1
0x04	User2
0x05	User3

(c) Color temperature name

Syntax	Header	Category	Function	Data1	Data2	Data3 to Data8
Control	0x8C	0x10	0x08	0x07	Code Table (2-c) Temp Select	0x00 – 0xFF
Enquiry	0x83			Code Table (2-c) Temp Select	0xFF	
Execute Judge	0x89			0xFF	0xFF	

Answer	Header	Answer	Return Data Size	Return Data1 to Data6	
Control	0x70	0x00			Completed
	0x70	0x01			Limit Over
	0x70	0x02			Limit Under
	0x70	0x03			Command Canceled
Enquiry	0x70	0x00	0x06	Character Data (0x00-0xFF)	Completed
Execute Judge	0x70	0x03			Command Disable
	0x70	0x04			Command All Enable

3. Size/Shift

(a) 16bit register

Syntax	Header	Category	Function	Data1	Data2	Data3
Control	0x8C	0x20	Code Table (3-a)-[a]	0x02	Code Table (3-a)-[b]	Code Table (3-a)-[b]
Enquiry	0x83			0xFF	0xFF	
Execute Judge	0x89			0xFF	0xFF	

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	
Control	0x70	0x00				Completed
	0x70	0x01				Limit Over
	0x70	0x02				Limit Under
Enquiry	0x70	0x03	0x02	Code Table (3-a)-[b]	Code Table (3-a)-[b]	Completed
Execute Judge	0x70	0x03				Command Disable
	0x70	0x04				Command All Enable

Code table (3-a)

[a] Function		[b] Range/Switch Code	Command		Execute Judge ACK		
			Control	Enquiry	Standby	Setup Sequence	Power On
0x0A	H Total Pixel	0x0190 – 0x09C4 (default +/- 50)	Yes	Yes	Disable	Disable	Disable

(b) 8bit register

Syntax	Header	Category	Function	Data1	Data2
Control	0x8C	0x20	Code Table (3-b)-[a]	0x01	Code Table (3-b)-[b]
Enquiry	0x83			0xFF	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	…	
Control	0x70	0x00					Completed
	0x70	0x01					Limit Over
	0x70	0x02					Limit Under
	0x70	0x03					Command Canceled
Enquiry	0x70	0x00	0x01	Code Table (3-b)-[b]			Completed
Execute Judge	0x70	0x00	Variable (Data Size)	Code Table (3-b)-[b]	…	…	Command Disable
	0x70	0x03					Command Disable
	0x70	0x04					Command All Enable

Code table (3-b)

[a] Function		[b] Range/Switch Code		Command		Execute Judge ACK		
				Control	Enquiry	Standby	Setup Sequence	Power On
0x00	H Size	0x00 – 0x3C		Yes	Yes	Disable	Disable	Enable
0x01	H Shift	0x00 – 0x3C		Yes	Yes	Disable	Disable	Enable
0x02	V Size	0x00 – 0x3C		Yes	Yes	Disable	Disable	Enable
0x03	V Shift	0x00 – 0x3C		Yes	Yes	Disable	Disable	Enable
0x04	Zoom Mode	0x00	Expd. 4:3	Yes	Yes	Disable	Disable	Note
		0x01	Letter Box					
		0x02	16:9					
		0x03	Subtitle					
		0x04	4:3					
0x05	Zoom size	0x00	Standard	Yes	Yes	Disable	Disable	Note
		0x01	X2					
		0x02	X3					
		0x03	X4					
0x06	Auto Pixel Adjust	0xFF	Execute	Yes	No	Disable	Disable	Enable
0x07	Dot Phase	0x00 – 0x1F		Yes	Yes	Disable	Disable	Enable
0x08	Auto Wide	0x00	Off	Yes	Yes	Disable	Disable	Note
		0x01	On					
0x09	4:3 Mode	0x00	4:3	Yes	Yes	Disable	Disable	Enable
		0x01	Expd. 4:3					

4. Status Enquiry

(a) Model name enquiry

Syntax	Header	Category	Function	Data1	Data2
Enquiry	0x83	0x30	0x00	0xFF	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	Return Data Size	Return Data1	
Enquiry	0x70	0x00	0x01	Code Table (4-a)	Completed
Execute Judge	0x70	0x04			Command All Enable

Code Table (4-a)

Format Select	
0x20	PFM-42V1

(b) Serial number enquiry

Syntax	Header	Category	Function	Data1	Data2
Enquiry	0x83	0x30	0x01	0xFF	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	Return Data3	Return Data4	
Enquiry	0x70	0x00	0x04	Upper 8bit Data	Middle Upper Data	Middle Lower Data	Lower 8bit Data	Completed
Execute Judge	0x70	0x04						Command All Enable

Return Data1 – Data4: 0x00000000 – 0x0098967F (0000000 – 9999999)

(c) Operation time enquiry

Syntax	Header	Category	Function	Data1	Data2
Enquiry	0x83	0x30	0x02	0xFF	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	Return Data3	Return Data4	
Enquiry	0x70	0x00	0x04	Upper 8bit Data	Middle Upper Data	Middle Lower Data	Lower 8bit Data	Completed
Execute Judge	0x70	0x04						Command All Enable

Return Data1 – Data4: 0x00000000 – 0xD693A3FF (0 sec. – 3,599,999,999 sec.)

(d) Software version enquiry

Syntax	Header	Category	Function	Data1	Data2
Enquiry	0x83	0x30	0x03	0xFF	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	
Enquiry	0x70	0x00	0x02	Upper 8bit Data	Lower 8bit Data	Completed
Execute Judge	0x70	0x04				Command All Enable

Return Data1 – Data2: 0x0000 – 0xFFFF

(e) H/V frequency enquiry

Syntax	Header	Category	Function	Data1	Data2
Enquiry	0x83	0x30	Code Table (4-b)	0xFF	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	Return Data Size	Return Data1	Return Data2	
Enquiry	0x70	0x00	0x02	Upper 7bit Data	Lower 7bit Data	Completed
	0x70	0x03				Command Cancel
Execute Judge	0x70	0x03				Command Disable
	0x70	0x04				Command All Enable

Return Data1 – Data2: 0x0000 – 0xFFFF

H Frequency = Return Data X 10 [Hz]

V Frequency = Return Data / 100[Hz]

Code Table (4-b)

Function		Execute Judge ACK		
		Standby	Setup Sequence	Power On
0x04	H Frequency	Disable	Disable	Enable
0x05	V Frequency	Disable	Disable	Enable

(f) Sync polarity enquiry

Syntax	Header	Category	Function	Data1	Data2
Enquiry	0x83	0x30	0x06	0xFF	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	Return Data Size	Return Data1	
Enquiry	0x70	0x00	0x01	Code Table (4-c)	Completed
	0x70	0x03			Command Cancel
Execute Judge	0x70	0x03			Command Disable
	0x70	0x04			Command All Enable

Code Table (4-c)

Function		Execute Judge ACK		
		Standby	Setup Sequence	Power On
0x00	H:Nega / V:Nega	Disable	Disable	Enable
0x01	H:Nega / V:Posi	Disable	Disable	Enable
0x02	H:Posi / V:Nega	Disable	Disable	Enable
0x03	H:Posi / V:Posi	Disable	Disable	Enable
0x04	SonG	Disable	Disable	Enable
0x05	No H/V Sync	Disable	Disable	Enable

5. User Memory

(a) Load/save

Syntax	Header	Category	Function	Data1	Data2
Control	0x8C	0x40	Code Table (5-a)-[a]	0x01	Code Table (5-b)
Execute Judge	0x89			0xFF	0xFF

(b) Memory name

Syntax	Header	Category	Function	Data1	Data2	Data3 to Data8
Control	0x8C	0x40	0x02	0x07	Code Table (5-b)	Character Data (0x00 – 0xFF)
Enquiry	0x83			Code Table (5-b)	0xFF	
Execute Judge	0x89			0xFF	0xFF	

Answer	Header	Answer	Return Data Size	Return Data1 to Data6	
Control	0x70	0x00			Completed
	0x70	0x01			Limit Over
	0x70	0x02			Limit Under
	0x70	0x03			Command Canceled
Enquiry	0x70	0x00	0x06	Character Data (0x00 – 0xFF)	Complete
Execute Judge	0x70	0x03			Command Disable
	0x70	0x04			Command All Enable

Code table (5-a)

[a] Function		[b] Range/Switch Code	Command		Execute Judge ACK		
			Control	Enquiry	Standby	Setup Sequence	Power On
0x00	Memory Load	Execute	Yes	No	Disable	Disable	Enable
0x01	Memory Save	Execute	Yes	No	Disable	Disable	Enable
0x02	Memory Name	Execute	Yes	No	Enable	Enable	Enable

Code Table (5-b)

Memory Number			
0x00	User Memory 1	0x0A	User Memory 11
0x01	User Memory 2	0x0B	User Memory 12
0x02	User Memory 3	0x0C	User Memory 13
0x03	User Memory 4	0x0D	User Memory 14
0x04	User Memory 5	0x0E	User Memory 15
0x05	User Memory 6	0x0F	User Memory 16
0x06	User Memory 7	0x10	User Memory 17
0x07	User Memory 8	0x11	User Memory 18
0x08	User Memory 9	0x12	User Memory 19
0x09	User Memory 10	0x13	User Memory 20

6. User Reset

Syntax	Header	Category	Function	Data1	Data2
Control	0x8C	0x50	Code Table (6)	0x01	0xFF
Execute Judge	0x89			0xFF	0xFF

Answer	Header	Answer	
Control	0x70	0x00	Completed
	0x70	0x03	Command Canceled
Execute Judge	0x70	0x03	Command Disable
	0x70	0x04	Command All Enable

Code Table (6)

Function		Range/Switch Code	Command		Execute Judge ACK		
			Control	Enquiry	Standby	Setup Sequence	Power On
0x00	Picture Reset		Yes	No	Disable	Disable	Enable
0x01	Audio Reset		Yes	No	Disable	Disable	Enable
0x02	Size Reset		Yes	No	Disable	Disable	Enable
0x03	PLL Reset		Yes	No	Disable	Disable	Enable

7. Answer

(a) Normal message

Answer

Header	0x70	Normal answer header
Category	0xXX	Code table (7-a): Normal code

Code table (7-a)

Normal code		
0x00	Completed	Normal response.
0x01	Limit over	The packet was received normally, but the data value was over the upper limit. Forcedly the monitor adjusted the data to maximum value.
0x02	Limit under	The packet was received normally, but the data value was under the lower limit. Forcedly the monitor adjusted the data to minimum value.
0x03	Command cancelled	The packet was received normally, but the command was cancelled because the function was not in adjustable mode, such as a function displayed as "—" in user menu.
0x04	Command all enable	The packet was received normally. The command function is all enable.
0x05	Fail	The packet was received normally, but the command was cancelled. Please retry.

(a) Error message

Answer

Header	0xE0	Error answer header
Category	0xXX	Code table (7-b): Error code

Code table (7-b)

Error code		
0x00	No function error	Packet header, category or function codes do not exist in this protocol.
0x02	Data number error	The data value in "Data num" area of received packet was different from the function's own number
0x06	Mode error	The monitor is already in the service mode via remote commander operation. (The service mode through IR remote has priority over the serial remote command.)
0x07	Time out	Packet communications are interrupted by some error, and did not return to normal communication within 2 seconds.